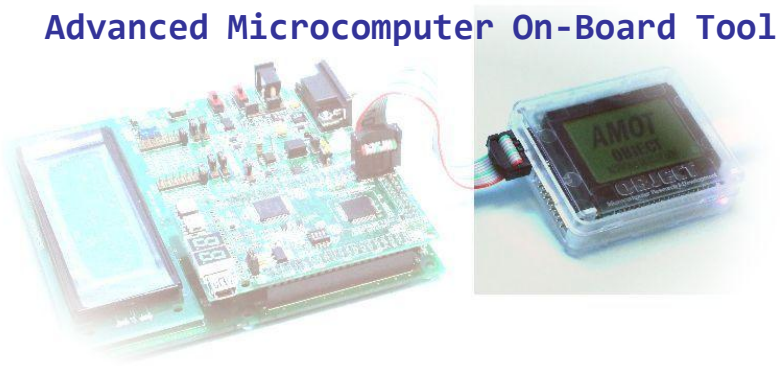
AMOT Users Manual
Ver 1.8

AMOT

Advanced Microcomputer On-Board Tool



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[1] Product Overview

1.1 Overview

AMOT is an on-board development tool for a system microcomputer made of Panasonic. AM (As follows: microcomputer). AMOT can be used with one as an onboard programmer and an on-board debugger of the MN101C/MN101E/MN103S/MN103L series. The standard is appended to onboard programmer software (AMOBP Commander). Please buy DebugFactory Builder for AMOT for the debugger software. Moreover, the software of the latest version is downloadable from our company WEB site.

1.2 Specification

Product Model	AMOT MODEL-01D
Support microcomputer *1	Panasonic MN101C/MN101E/MN103S/MN103L series
Size/Weight	W=69/D=57/H=20(unit：mm) / 80gram
Power Supply	USBBUS POWER only
Current	250mA (MAX500mA/ With automatic return type over current protection)
System requirements	Temperature when operating（no Dewfall） 0～45℃ Storage temperature (no dewfall） -20～65℃
Host computer Interface	USB 1.1/2.0(FULL-SPEED) MicroB Standard
Support OS	Microsoft Windows XP(over SP2)/Vista/7 (32/64bit)
Programmer software	AMOBP Commander / CPU Package over V4.0.0.0
Debugging software	Debug Factory Builder for AMOT
Hand-Held Monitor	Function that can control target microcomputer and monitor it without connection of PC *2
Built-in store EEPROM	4MByte (1to4 Banked)
External flash	microSD card (FAT/FAT32 support LFN)
Display device	64x128dot monochrome LCD w/t back light 4 RGB LED / One dual-colors LED
Manual operating device	3 Push switch (A/B/C)
Information device	Buzzer (Operation notification, Error notification, etc.)
Target Interface	DWire8(2wiremodel / 3 wire model)/DWire32A/DWire32L 10Pin (2.7Vto5.0V/ Automatic follow) JTAG 16Pin (2.7Vto5.0V/ Automatic follow) *3
Target connection distance	Max 1m / Interface clock is 4MHz (Recommendation under 20cm) *4
Target protection	Isolation, ESD protect, Over current protection, automatic return type over current protection (500mA)
Power supply to target	3.3V / 5.0V (max200mA) *5
Support Target voltage	2.7Vto 5.0V(Automatic follow) *5
Target power supply monitor	Dual-colors LED (Normality : Green / Error : Red) *6
Version up	The upgrade of the firmware is possible by the on-site (special update software distribution schedule).
Product configuration	AMOT ……1 USB cable（1.5M MicroB）……1 Target Cable (10P:20cm) ……1 Software CD-ROM ……1 Product warranty card ……1

*1 Please confirm a detailed, individual kind on our company WEB site.
*2 when the field is maintained by using LCD, the switch, and LED of AMOT from the user program, it is possible to use it.
*3 AMOT MODEL-01D doesn't support JTAG.
*4 necessary to lower communication clock (DWire/JTAG) by the circuit and the system requirements of the target board.
*5 possible only for isolation mode OFF.
*6 Dual-colors LED show the operation of the overvoltage protection. The monitor of the voltage of the target is also possible at isolation mode OFF.

1.3 Programmer Specification

Product Model	AMOT MODEL-01D				
Programmer software	AMOBP Commander over V4.0.0.0 (Free of charge) CPU package software over V4.0.0.0 (Free of charge)				
Support microcomputer *1	Panasonic MN101C/MN101E/MN103S/MN103L series				
Operational mode	On-line mode / Off-line mode（Built-in EEPROM / microSD card）				
Support file format	Load	Panasonic EX, EF, Intel HEX, Motorola S			
	Save	Panasonic EF, Intel HEX, Motorola S, AMOT OPF format (for microSD card)			
Security key	A peculiar security key code to microcomputer is supported. (release/program/status check)As for the security key code file format, Panasonic PX-FW2 is interchangeable.				
Sector protect	A peculiar sector protecting to microcomputer is supported. (program/status check)				
Program API	Control from other application is possible by the DDE function.				
Program Speed	Off-Line	MN101EF32D (68Kbyte)	Erase	2sec	8sec
			Program	5sec	
			Verify	1sec (Read verify)	
		MN103SFA7K (256Kbyte)	Erase	5sec	20sec
			Program	13sec	
			Verify	2sec (sum verify)	
		MN103LF08K (256KByte)	Erase	5sec	18sec
			Program	11sec	
			Verify	2sec (sum verify)	
	On-Line	MN101EF32D (68Kbyte)	E.P.V *2	8sec (Read verify)	
		MN103SFA7K (256KByte)	E.P.V *2	15sec (Read verify)	
		MN103LF08K (256KByte)	E.P.V *2	15sec (Read verify)	

*1 Please confirm a detailed, individual kind on our company WEB site.
*2 E.P.V（Erase + Program + Verify）

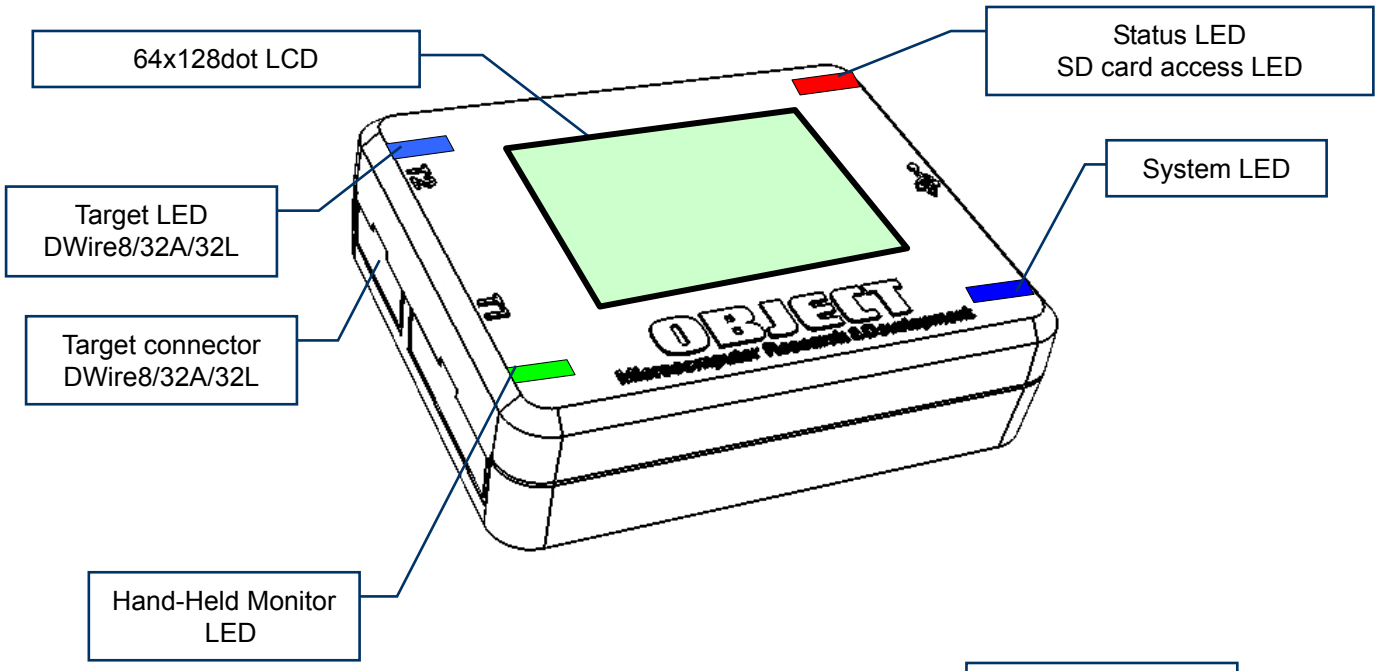
1.4 Debugger Specification

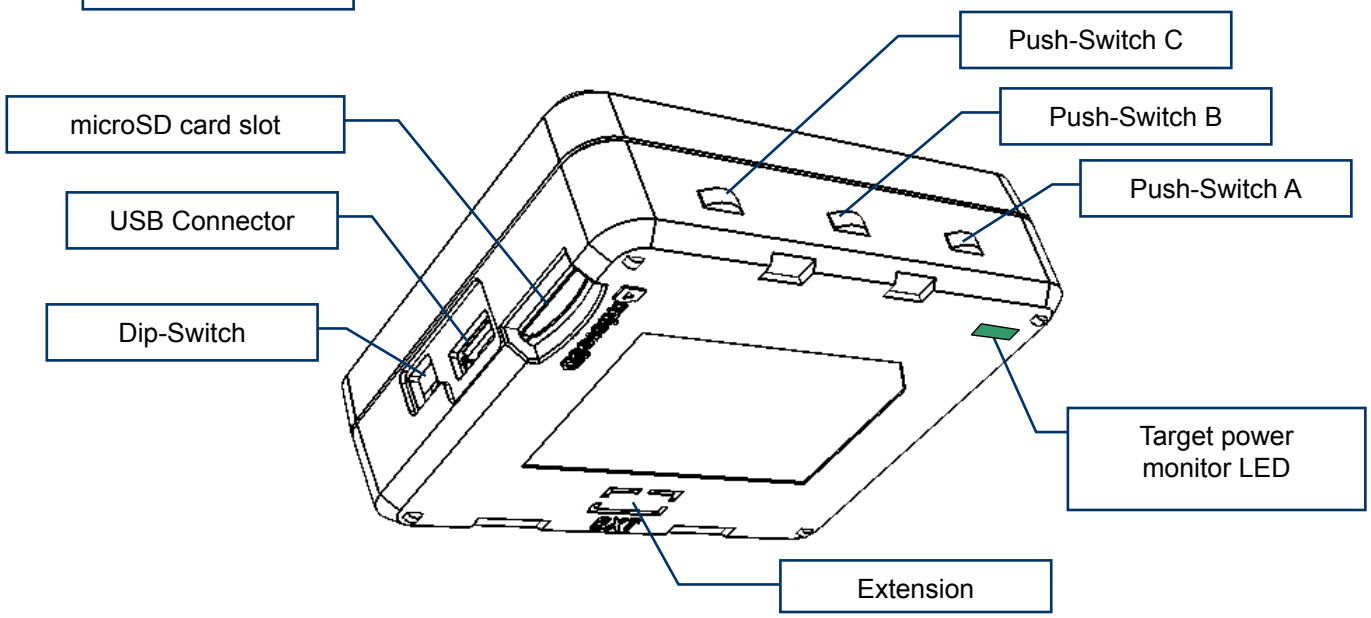
Product Model	AMOT MODEL-01D
Debugging software	Debug Factory Builder for AMOT
Support microcomputer *1	MN101C/MN101E/MN103S/MN103L series
Memory mode	Single chip / External memory mode
Program execute environment	Flash ROM on microcomputer
Step execution	Assembler code, C source code （function step execute support)
Force break	ESC key
Break before execute	2 points and come break（console position break）
Software break	Max 255 points
Event break	1 point Data access（data bit mask, Event area）
Back trace	Call history display
H/W trace	Impropriety
Time measure	Impropriety
Real time watch	RAM monitor
Start-up code	Attached to the product (Start.asm) *4

Debug monitor code	Attached to the product (Start.asm to necessary linked user program code)
Used microcomputer pin	OCDDATA, OCDCLK, DMOD, NRST *2 *3
Limitations	User NMI cannot use it. The count improvement of the watch dock timer becomes debugger break operation. The undefined instruction execution becomes debugger break operation. MN101C/E uses the break stack by 13 bytes. *5

*1 Please confirm a detailed, individual kind on our company WEB site.
*2 The PIN name is different according to Microcomputer Please refer to LSI manual of each microcomputer for details.
*3 AMOT drives the NRST pin with Open Drain. User NRST signal can be connected with a wired OR circuit.
*4 Code size of Start.asm is different according to microcomputer series.
*5 MN103S/MN103L don't use the user stack.

[2] Part Name



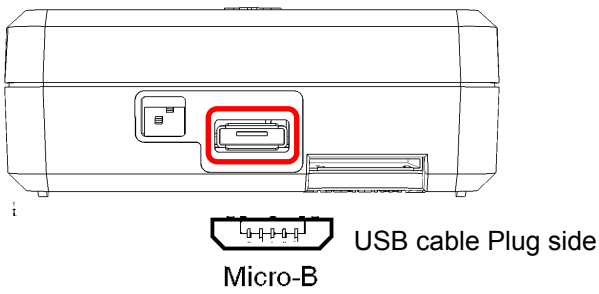


Attention! Please do not open the case. The product with signs where the case was opened might not be repaired.

[3] Part Explanation

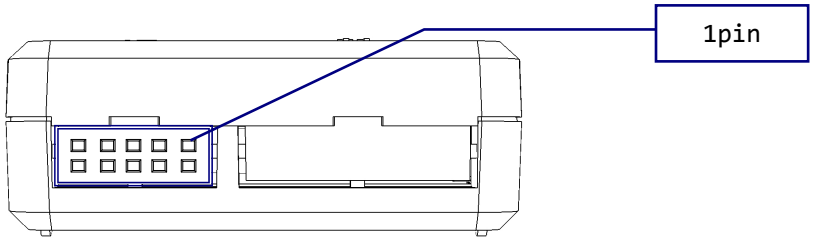
3.1 USB Connector

This is MicroB standard USB target connector that connects the personal computer with AMOT. Please do the corner with the cutting lack on below and insert one with a wide USB connector.



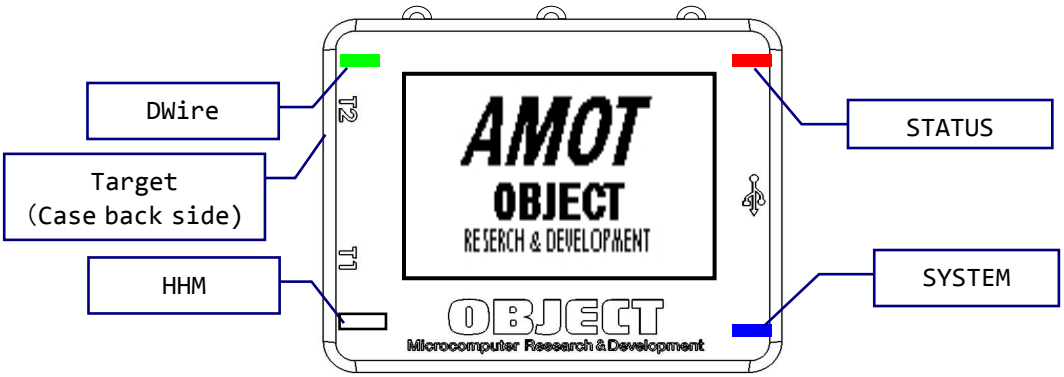
3.2 Target Connector (DWire8/32A/32L)

This is a connector connected with the target microcomputer board. Please refer to four target connection for details of the signal and the connection method with the target microcomputer board.



3.3 LED

Four LED is arranged in four upper corners of AMOT. The meaning that each LED shows is as shown in the table below. The lighting color in the figure below is an image.

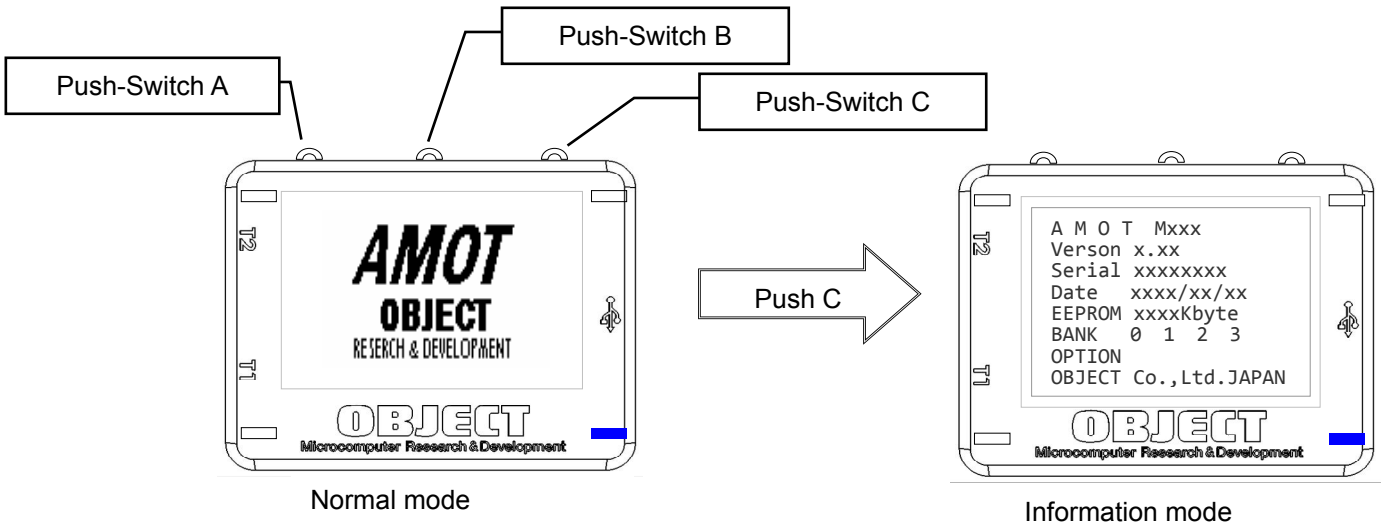


LED	BLUE	RED	GREEN	Etc
SYSTEM	Normal	USB Function	Firmware update, and more	GREEN blinks at about 2sec BLUE lighting + intervals usually.
STATUS		SD card access		
DWire			DWire access	
Target		Unusual voltage	Normal voltage	Putting out lights is power supply OFF.
HHM				It is used by handheld computer monitor mode.

The above-mentioned table midair white column depends on the personal computer side application used.

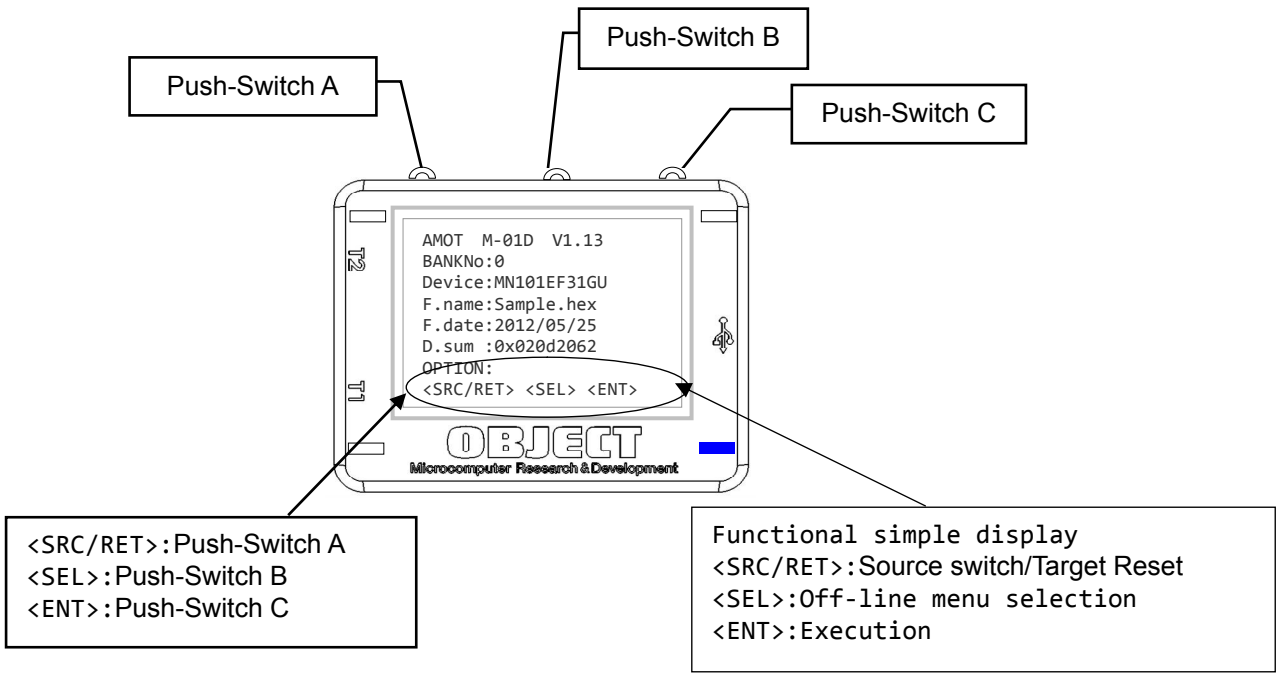
3.4 LCD

AMOT is 64×128 Graphic LCD dot is installed. It chiefly uses it at the off-line program mode and the hand-held monitor mode. Please refer [8] Operation Mode for each mode. The figure below is an example in the state that became an information mode from a normal mode by one time of a short push of "Operation button C".



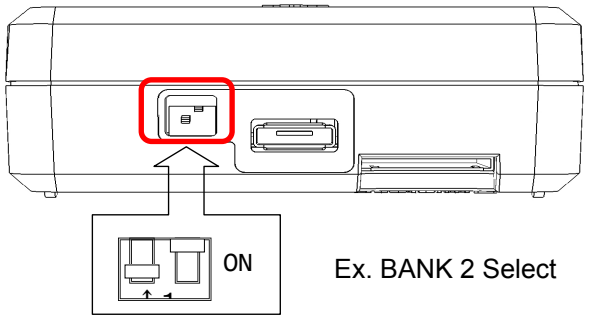
3.5 Push-Switch (A/B/C)

This switch is used for the operation at the time of an off-line program mode or handheld computer monitor mode.
Since a switch function changes by operational mode, this manual has been indicated to be A, B, and C.
The switch function according to operational mode in the display of the LCD lower part is displayed.



3.6 Dip-Switch

Operation button C is selected at a normal mode and the number when short push Off-Line Program is executed once is selected. An advanced Off-Line program mode is variously installed as for AMOT, and it is also possible to execute an Off-Line program by the operation the switch once as well as AM1/3 On-Board Programmer.

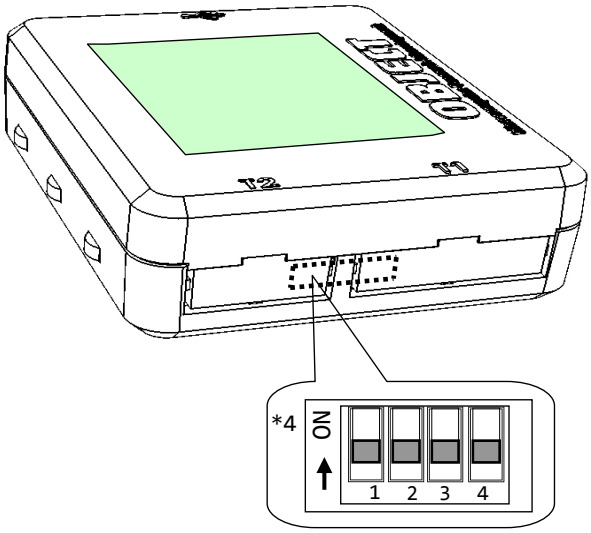


Ex. BANK 2 Select

Dip-Switch		Selected number
2	1	
OFF	OFF	BANK 0
OFF	ON	BANK 1
ON	OFF	BANK 2
ON	ON	BANK 3

3.7 Isolation Switch

This Dip-Switch is a switch that switches the isolation mode in the target interface. Please operate this switch with tweezers etc. with there must not power supply because it is in the secluded place between target connectors DWire. Isolation mode OFF is used to supply power supply (VDDOUT) from AMOT to the target board and to operate AMOT only in the power supply from the target board in an off-line mode.
However, we will usually **strongly recommend using it in the isolation mode** that uses the USB power supply.



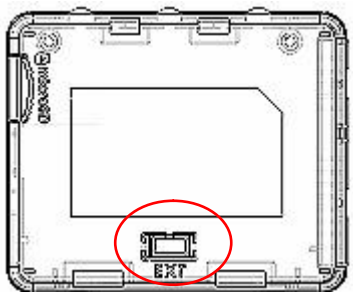
Target Interface	1	2	3	4	Explanation
DWire8/32A/32L	OFF	OFF			Isolation mode ON (Default)
	ON	ON			Isolation mode OFF
	OFF	ON			Set prohibition
	ON	OFF			

Attention! 1/2(DWire) Please set it to ON/OFF by the set.

3.8 Extended connector

It is an extended connector aiming at control of the exterior to AMOT.

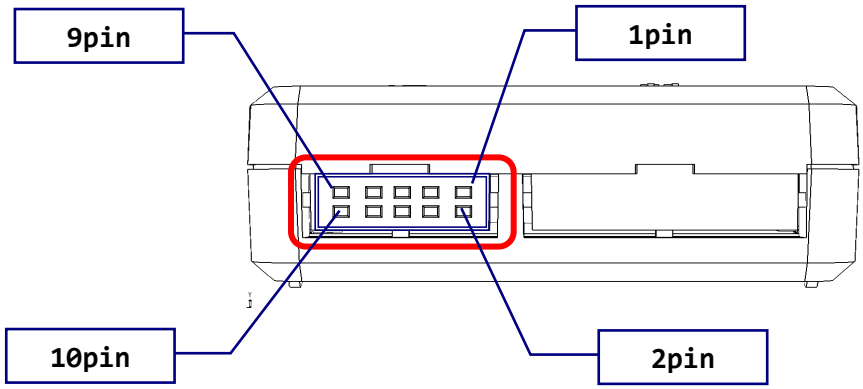
Cautions: This function is not supported as of June, 2012.



[4] Target Connection

4.1 DWire8/DWire32A/DWire32L

It connects it with the DWire connector and the target microcomputer board of AMOT with target cable (10P) of the product attachment.

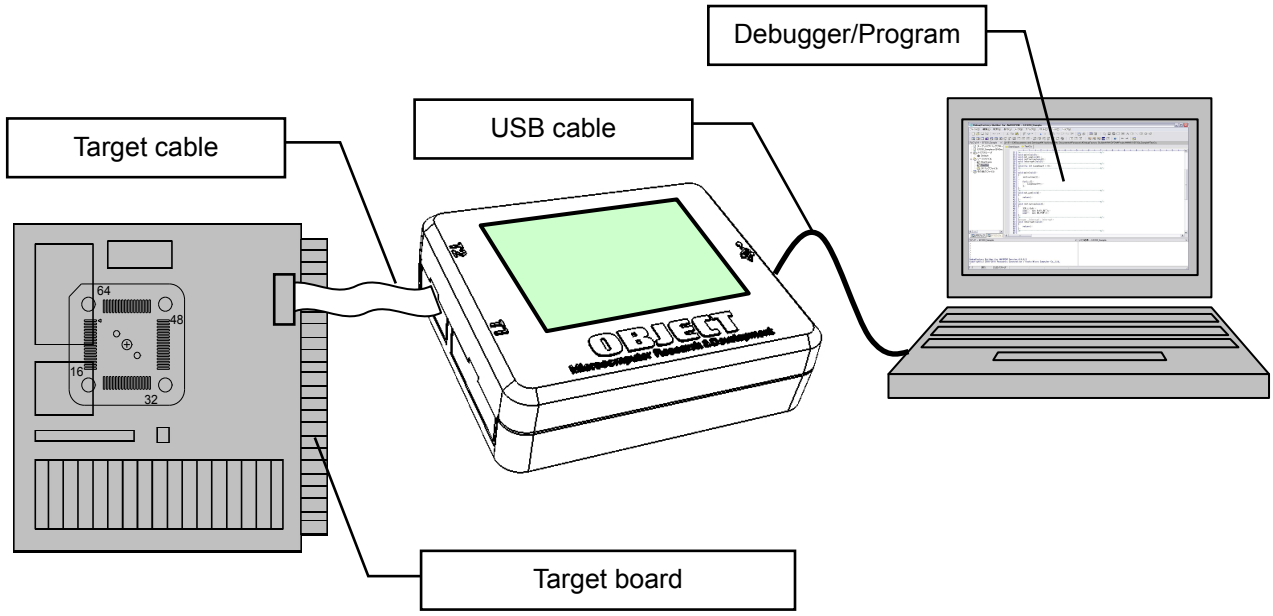


4.2 Target connector table

Pin	Signal	Direction	Explanation
1	NRST	Output	Microcomputer reset signal I (connects to target microcomputer)
2	GND	-	Target GND
3	OCDDATA	I/O	Data signal (connects to target microcomputer)
4	VDD	Input	Power supply from target board (2.7Vto5.0V) Power supply from AMOT (case of not isolation mode)
5	N.C	-	Please do not connect anything.
6	N.C	-	
7	VDDOUT	-	
8	DMOD	Output	Mode signal (connects to target microcomputer)
9	OCDCLK	Output	Clock signal (connects to target microcomputer)
10	GND	-	Target GND

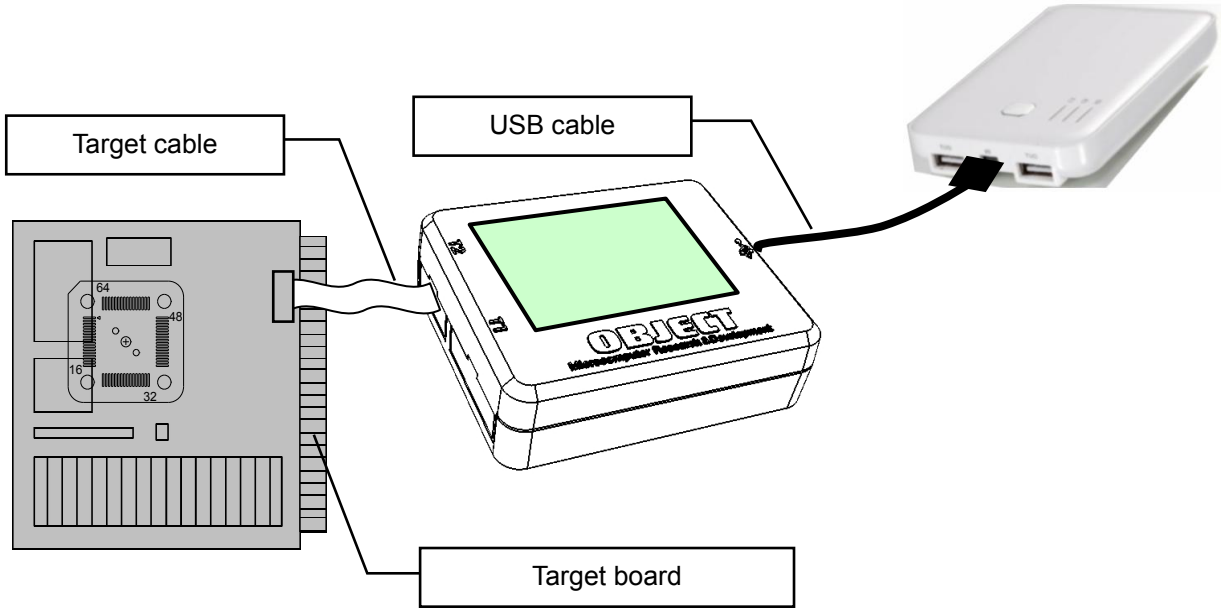
4.3 Connected image chart

4.3.1 On-line



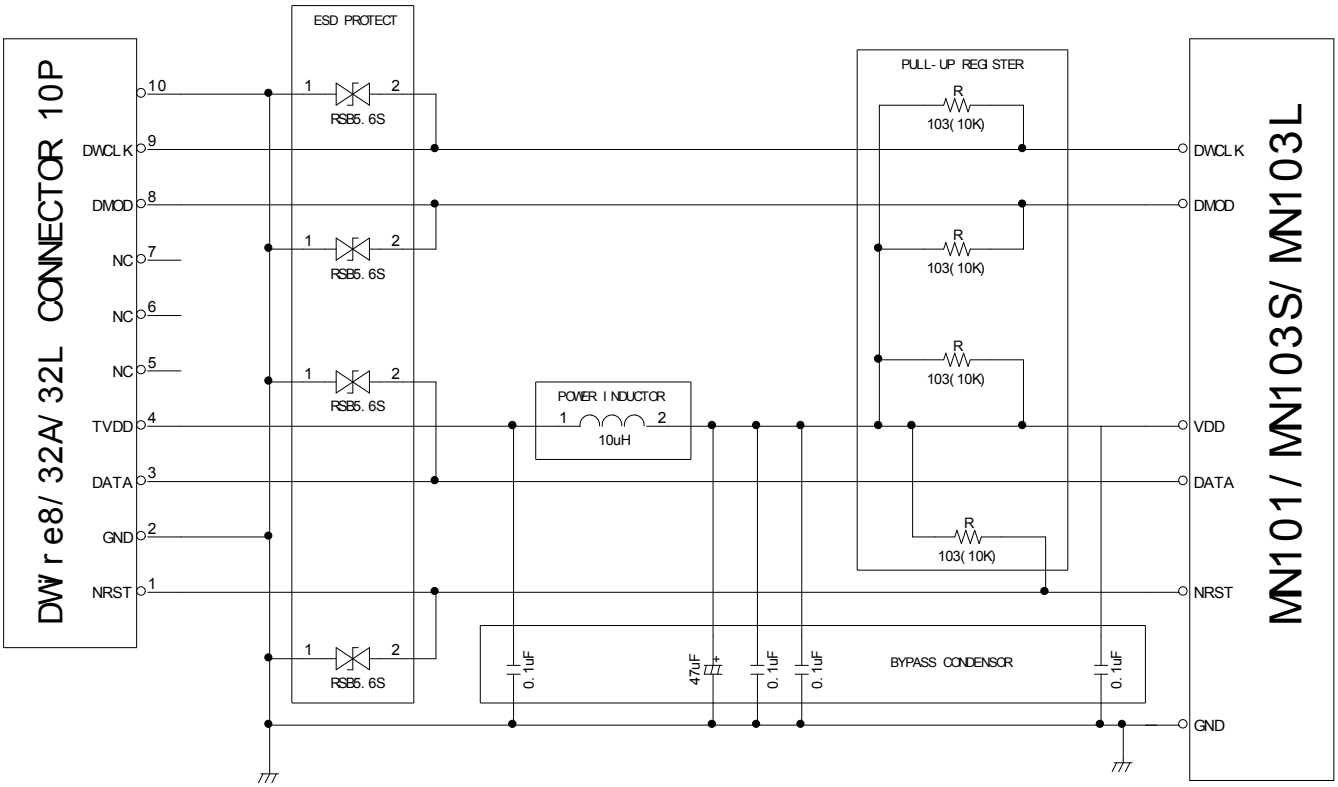
4.3.2 Off-line

The battery for smart phones



4.4 Target Circuit Example

・PULL-UP REGISTER..... Indispensable. 10Kohm to 33Kohm pull-up resister (*1)
・BYPASS CONDENSOR..... Not indispensable. However, mount according to the pattern of the target circuit though.
・ESD PROTECT..... Not indispensable. However, use of avalanche type ESD protection diode is recommended.
・POWER INDUCTOR..... Not indispensable. However, Use 10uH to 22uH is recommended.
*1 not indispensable when there is a pull-up resistor in the microcomputer such as MN103SFC2D.



[5] USB driver

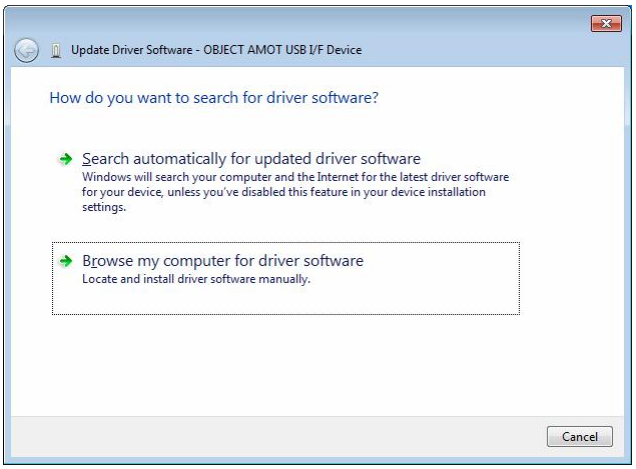
The USB driver for AMOT is supplied to attachment CD. Windows demands the driver when AMOT is connected with the personal computer for the plug and play, and installs it, please specifying "¥USBDriver¥OmWinUsb.inf" in CD-ROM.

	Explanation
USB driver support OS	Microsoft Windows XP (over SP2) Microsoft Windows XP64 (over SP2) Microsoft Windows Vista 32bit/64bit Microsoft Windows 7 32bit/64bit
USB driver support product	AMOT AM1 On-Board Programmer Type1/Type2L *1 AM3 On-Board Programmer Type1/Type2L *1 AM1 Debug Probe DWire *1 AM32L Debug Probe DWire *1
Old USB driver *1	AM1 Starter Kit USB I/F DWire8 AM1 Debug Probe Serial USB I/F AM1 Debug Probe DWire USB I/F AM3 On-Board Programmer DWire USB I/F AM1 On-Board Programmer DWire USB I/F AM3 Starter Kit USB I/F AM32L Debug Probe DWire USB I/F AM1 DWire8 Converter Device USB I/F AM1 UART/USB to DWire8 Converter Device USB I/F JTAG MINI PROBE USB I/F

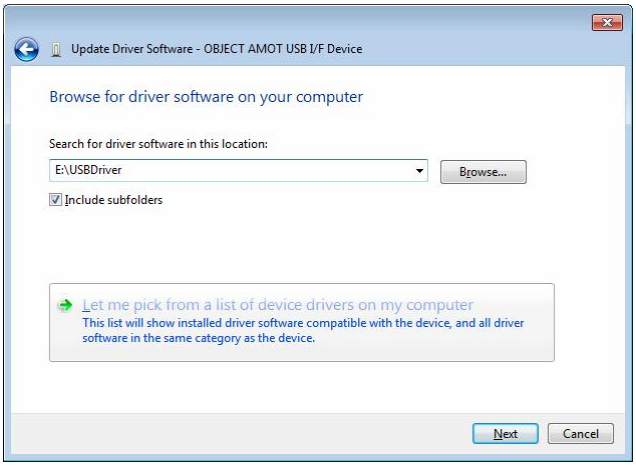
*1 please deletes the old USB driver previously when old USB driver (OmUsbi.sys) is installed.

5.1 USB driver installation (Windows7)

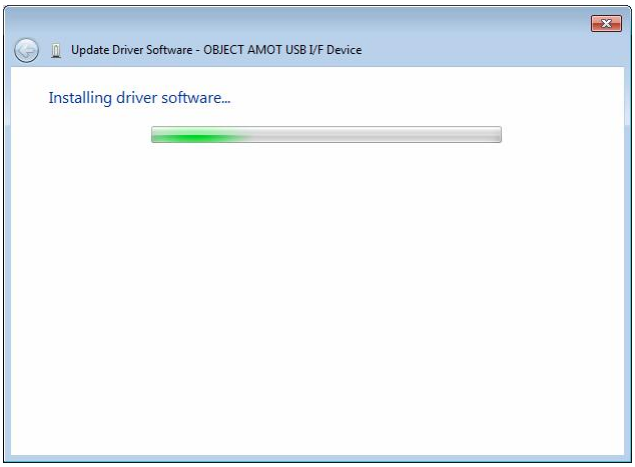
Because the message in the figure below is output after it automatic of the USB driver retrieves it when AMOT is connected with the personal computer in which Microsoft Windows7 is installed for the first time, ····· referring to the computer is clicked.


Update Driver Software - OBJECT AMOT USB I/F Device
How do you want to search for driver software?
Search automatically for updated driver software
Windows will search your computer and the Internet for the latest driver software for your device, unless you've disabled this feature in your device installation settings.
Browse my computer for driver software
Locate and install driver software manually.
Cancel

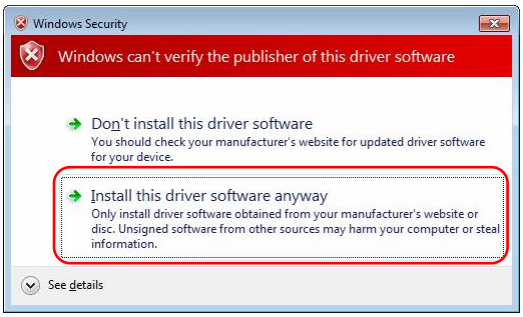
Next, because the dialog window where the reference place of the driver file is specified is displayed, reference (R), it clicks on a button, and "USBDriver" of CD-ROM of the product attachment is specified. Please put the check also in (I) that retrieves * subfolder in this dialog window at that time.


Update Driver Software - OBJECT AMOT USB I/F Device
Browse for driver software on your computer
Search for driver software in this location:
E:\USBDriver
Browse...
Include subfolders
Let me pick from a list of device drivers on my computer
This list will show installed driver software compatible with the device, and all driver software in the same category as the device.
Next
Cancel

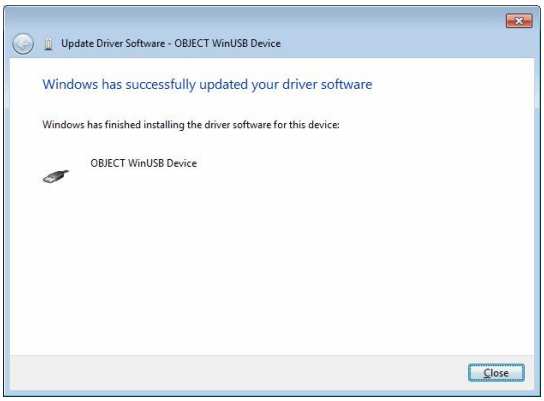
When (N) after the driver file place is specified to the following is clicked, the driver's installation is begun.



Next, the dialog window where warning of security is shown might be displayed, and, in that case, click (I) that installs this driver software, please.

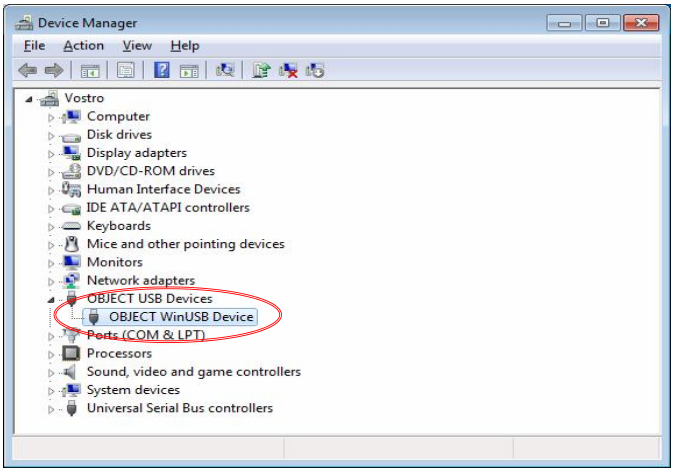

Windows Security
Windows can't verify the publisher of this driver software
Don't install this driver software
You should check your manufacturer's website for updated driver software for your device.
Install this driver software anyway
Only install driver software obtained from your manufacturer's website or disc. Unsigned software from other sources may harm your computer or steal information.
See details

The message window that the device driver was correctly installed at the end is displayed, and it is clicked that the name is "OBJECT WinUSB Device" and click (C) that confirms and shuts, please.


Update Driver Software - OBJECT WinUSB Device
Windows has successfully updated your driver software
Windows has finished installing the driver software for this device:
OBJECT WinUSB Device
Close

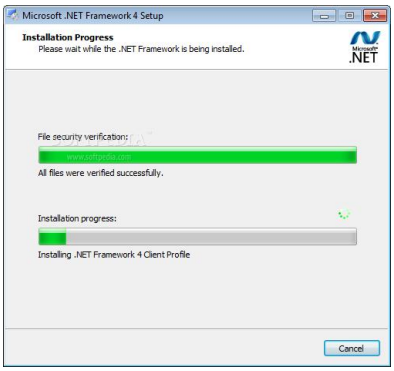
5.2 USB driver uninstallation

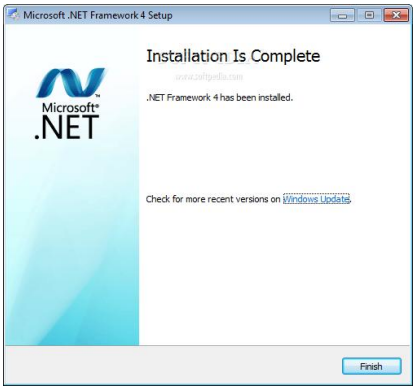
Please delete the device manager "OBJECT USB Device" > “OBJECT WinUsb Device” of Windows about the USB driver's deletion.



5.2.1 Microsoft .NET Run time package

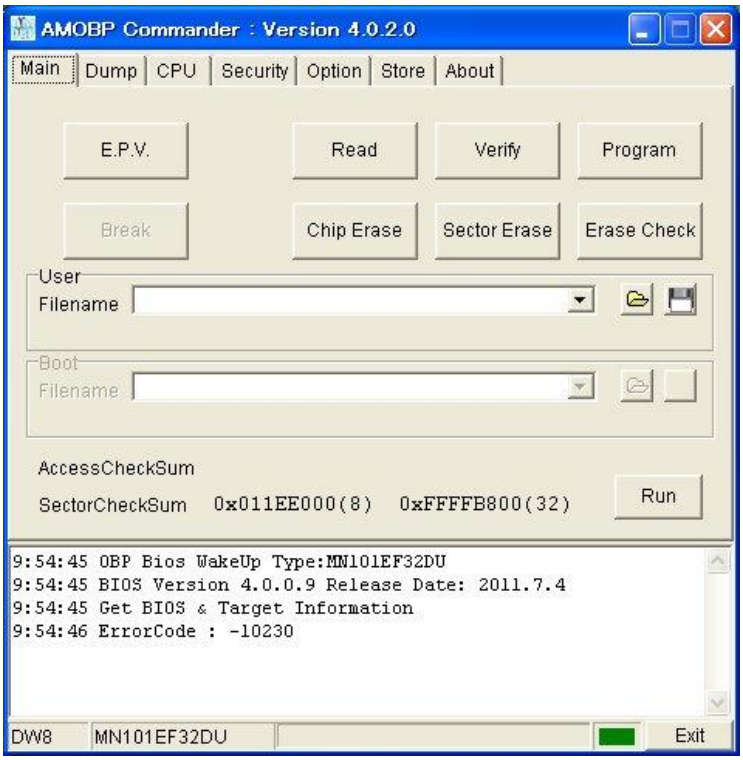
Microsoft .NET framework is necessary for the USB driver of AMOT. The re-distribution version installer is supplied to AMOT attachment CD-ROM and installs it, please when the NET such as XP (SP2) framework is not installed. (¥DotNet¥dotNetFx40_Full_x86_x64.exe)


Microsoft .NET Framework 4 Setup
Installation Progress
Please wait while the .NET Framework is being installed.
File security verification:
All files were verified successfully.
Installation progress:
Installing .NET Framework 4 Client Profile
Cancel


Microsoft .NET Framework 4 Setup
Installation Is Complete
.NET Framework 4 has been installed.
Check for more recent versions on Windows Update.
Finish

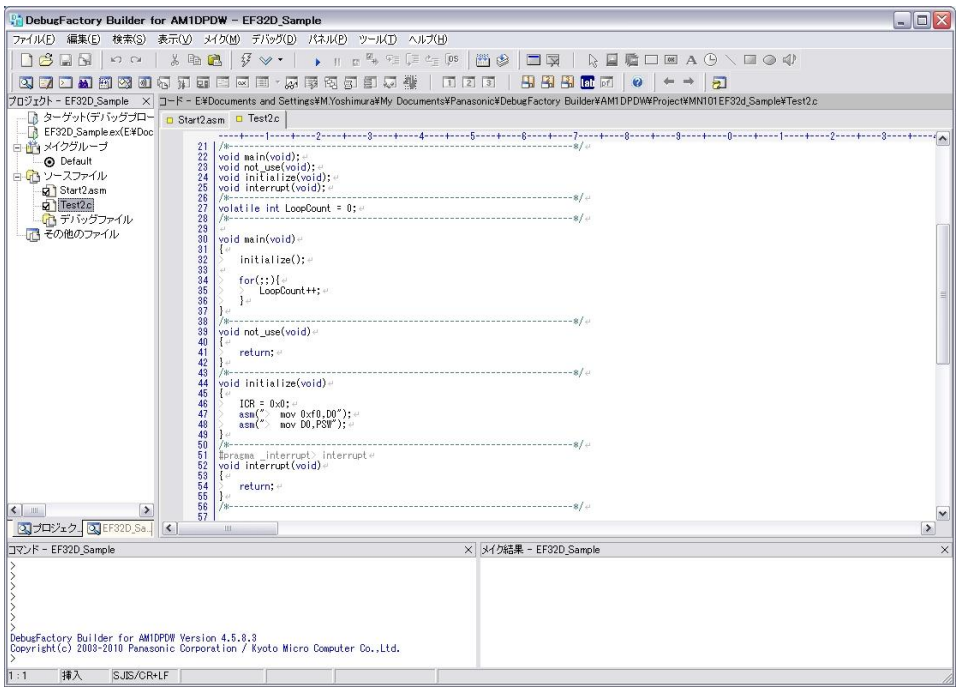
[6] Programmer Software (AMOBP Commander)

Please refer to 'AMOBP Commander User's manual' of the separate volume.



[7] Debugger Software (Debug Factory Builder)

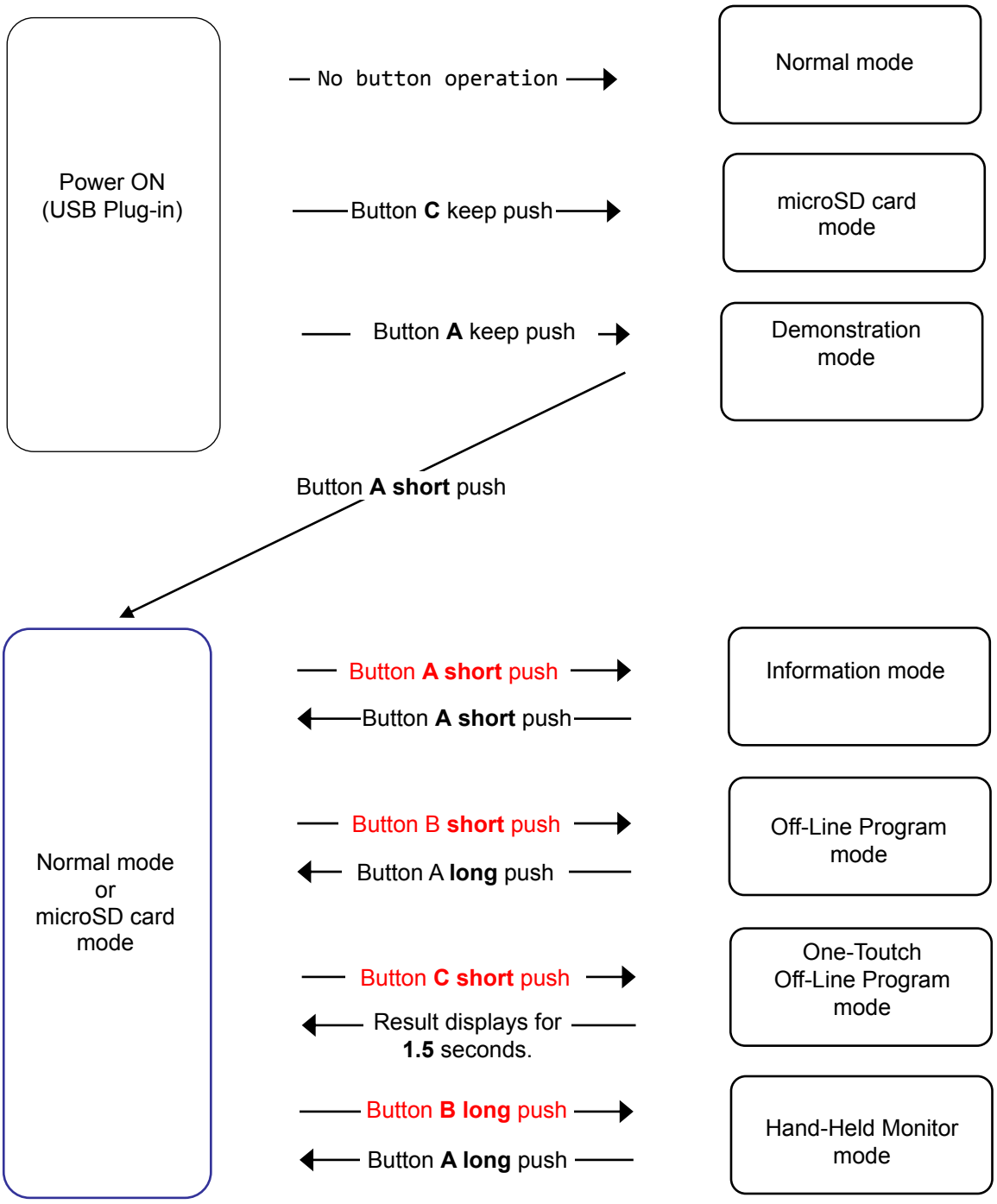
Please refer to 'Debug Factory Builder4 for AMOT quick start guide' and 'Debug Factory Builder4 for AMOT user's manual' of the separate volume.


DebugFactory Builder for AM1DPDW - EF32D_Sample
DebugFactory Builder for AM1DPDW Version 4.5.8.3
Copyright(c) 2008-2010 Panasonic Corporation / Kyoto Micro Computer Co.,Ltd.

[8] Operation Mode

The operation mode of AMOT has "Normal mode", "microSD card mode","Demonstration mode","Information mode","Off-line program mode", "One-Toutch Off-Line Program Mode", and "Hand-held monitor mode".

8.1 Mode transition figure



Mode	Operation		Explanation
Demonstration mode	Push-Switch A	Short	
		Long	Changes to a normal mode.
	Push-Switch B	Short	Buzzer sound ON/OFF switch
		Long	
	Push-Switch C	Short	
		Long	
Note: These operations that sound LED lighting, a LCD display, and a buzzer are repeated and performed.			

Mode	Operation		Explanation
microSD card mode	Push-Switch A	Short	Changes to the information mode.
		Long	The reset pulse is output to the target (Low pulse).
	Push-Switch B	Short	Changes to the off-line program mode.
		Long	Changes to the hand-held monitor mode.
	Push-Switch C	Short	changes to off-line program start > off-line program mode.
		Long	
Note: USB mass storage device mode. Then, a power supply (USB cable insertion) on starts in this mode with push-switch C pushed.			

Mode	Operation		Explanation
Normal mode	Push-Switch A	Short	Changes to the information mode.
		Long	The reset pulse is output to the target (Low pulse).
	Push-Switch B	Short	Changes to the off-line program mode.
		Long	Changes to the hand-held monitor mode.
	Push-Switch C	Short	Off-line program start.
		Long	
Note: When starting, mode usually. Graphic opening image of LCD display. The content of BANK specified with the dip switch in operation button C short push is off-line programmed to the target.			

Mode	Operation		Explanation
Information mode	Push-Switch A	Short	Changes to a normal mode.
		Long	
	Push-Switch B	Short	
		Long	
	Push-Switch C	Short	
		Long	
Note: Inside information display of AMOT			

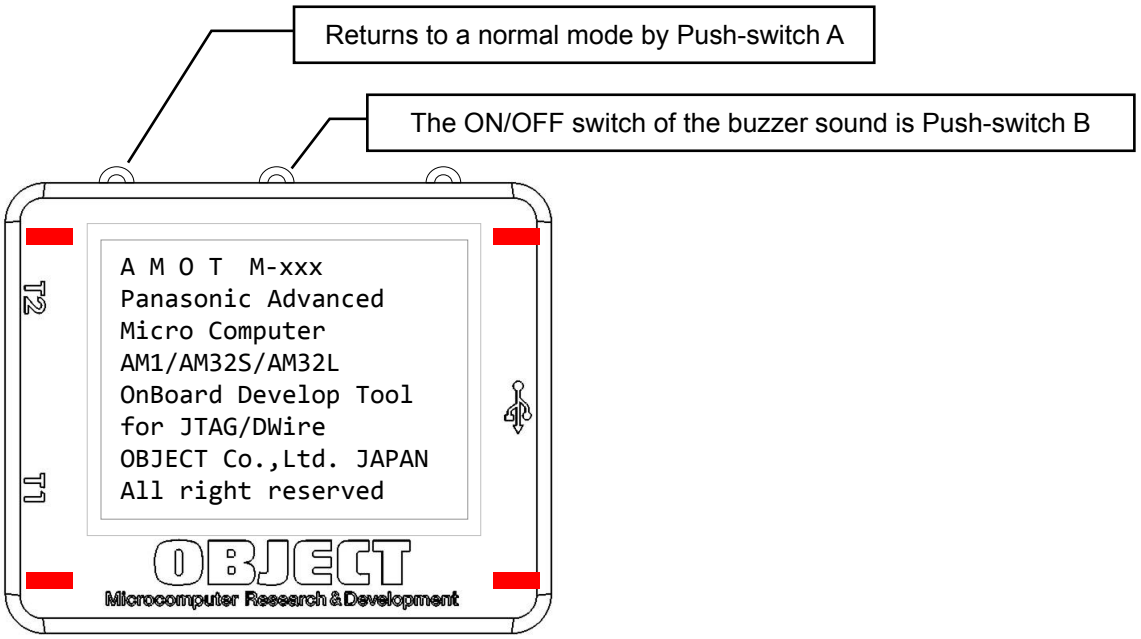
Mode	Operation		Explanation
Off-line program mode (Main menu)	Push-Switch A	Short	Source switch (built-in EEPROM/microSD card)
		Long	Changes to a normal mode.
	Push-Switch B	Short	Select a bank of built-in EEPROM or select a file of SD card.
		Long	
	Push-Switch C	Short	To an off-line sub menu .
		Long	
Note: Mode programmed from built-in EEPROM or microSD card to target microcomputer board			

Mode	Operation		Explanation
Off-line program mode (Sub menu)	Push-Switch A	Short	To an off-line main menu
		Long	.
	Push-Switch B	Short	Select of E.P.V/Erase/Program/Verify
		Long	
	Push-Switch C	Short	Off-line program start / stop.
		Long	
Note: Mode programmed from built-in EEPROM or microSD card to target microcomputer board			

Mode	Operation		Explanation
Hand-held monitor mode	Push-Switch A	Short	Please refer to [8.7] Hand-held monitor.
		Long	Changes to a normal mode.
	Push-Switch B	Short	The ON/OFF switch of the buzzer sound is Push-switch B
		Long	
	Push-Switch C	Short	
		Long	
Note: Mode without connection of personal computer that simplicity debugs and monitors target microcomputer board.			

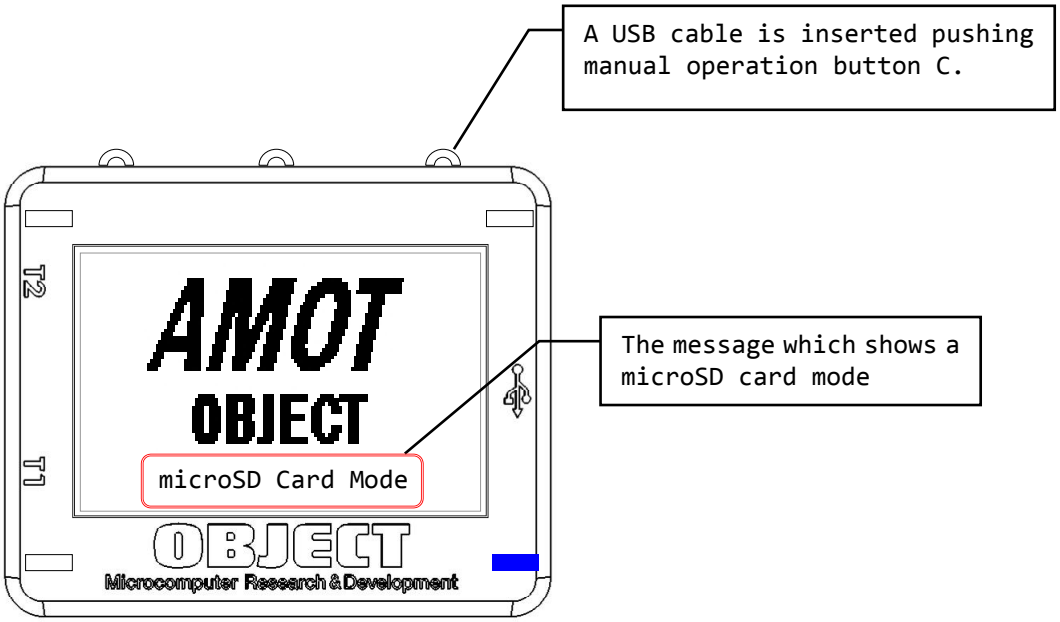
8.2 Demonstration mode

This mode is a demonstration mode displayed repeating information etc. on AMOT. Then, a power supply (USB cable insertion) on changes to this mode with Push-switch A pushed. It can be a short push of Push-switch B and ON/OFF of the buzzer sound be a switch in this mode. Moreover, it returns to a normal mode in Push-switch A as it is a long push and ON-OFF of the power supply doesn't exist.



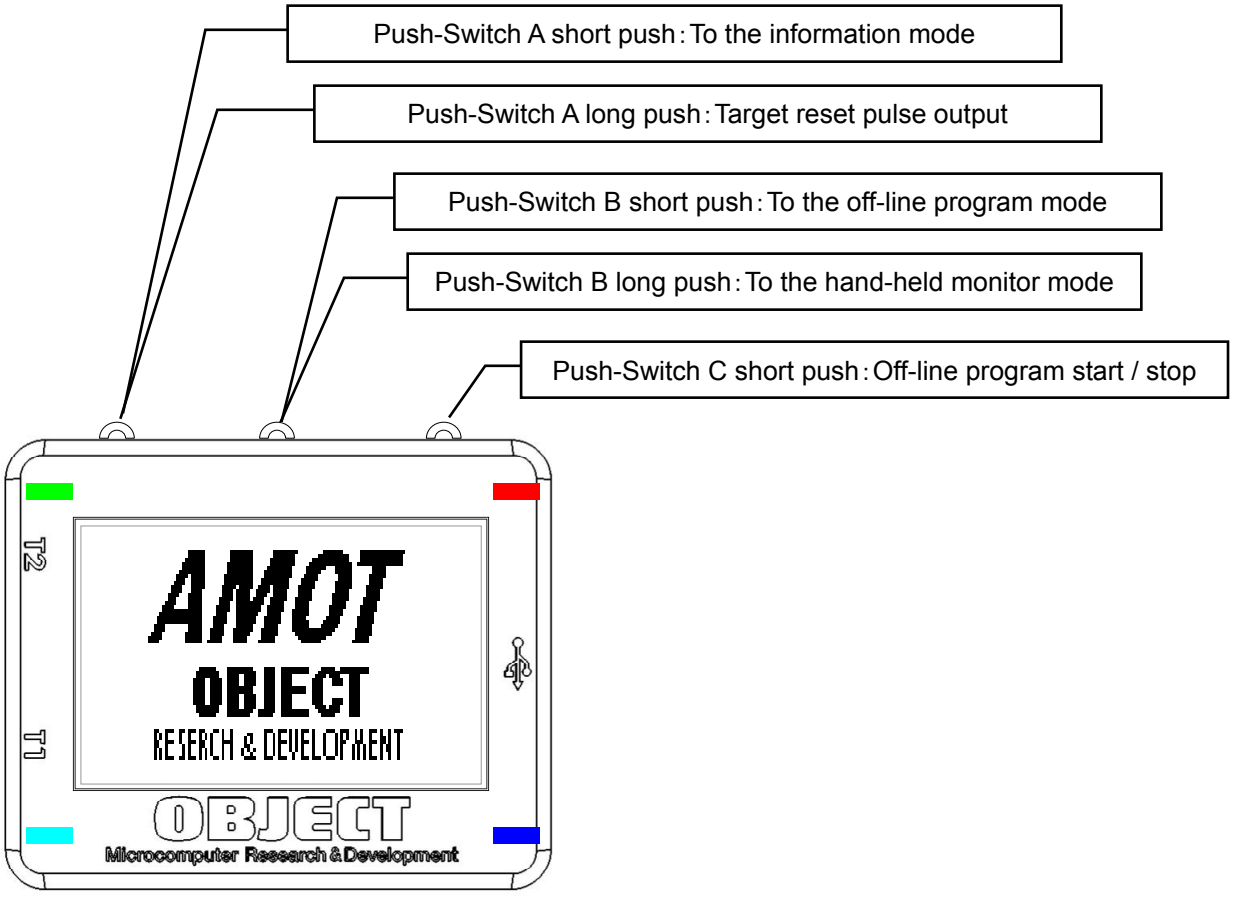
8.3 microSD card mode

USB mass storage device mode of 10.3 clauses explains in detail.



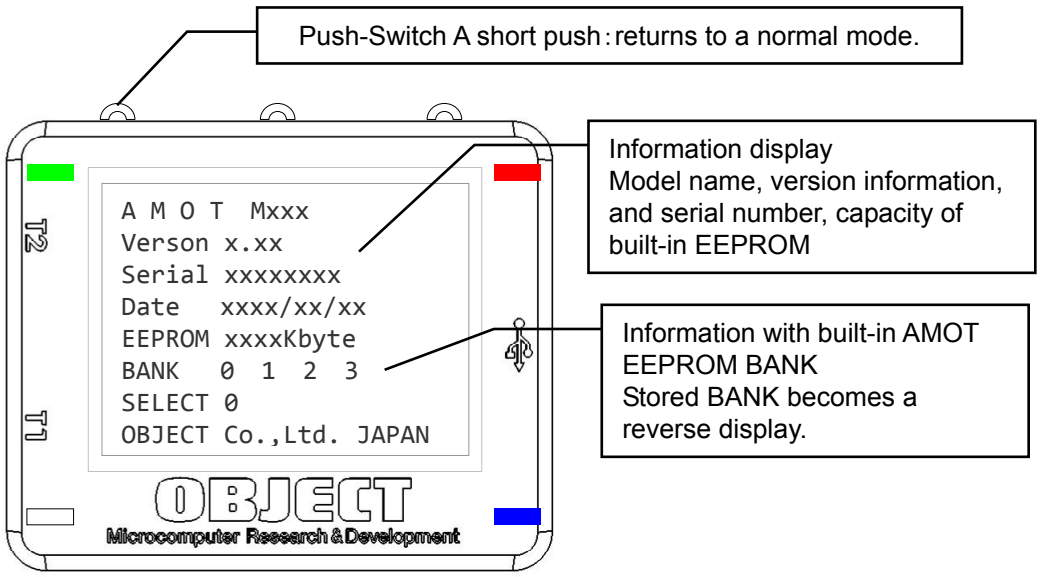
8.4 Normal mode

This is usual mode of AMOT. LCD becomes an opening graphic display.


Push-Switch A short push : To the information mode
Push-Switch A long push : Target reset pulse output
Push-Switch B short push : To the off-line program mode
Push-Switch B long push : To the hand-held monitor mode
Push-Switch C short push : Off-line program start / stop
T2
T1
AMOT
OBJECT
RESERCH & DEVELOPMENT
OBJECT
Microcomputer Research & Development

8.5 Information mode

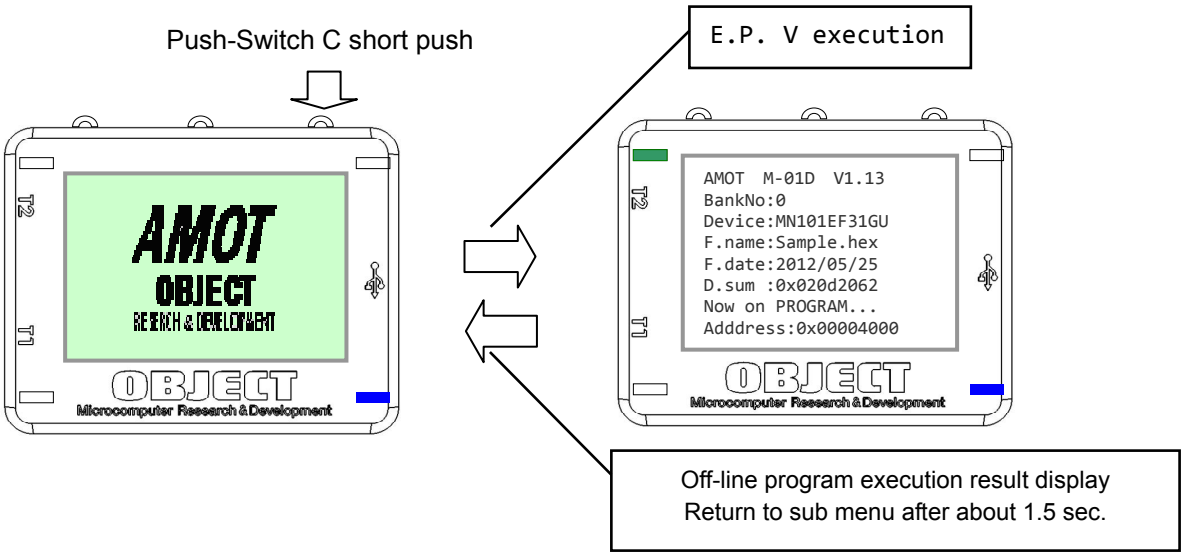
If push-switch A is done from a normal mode a short push once, it becomes an information mode. It returns when operation button A is done to a normal mode a short push once again.



8.6 Off-line program mode

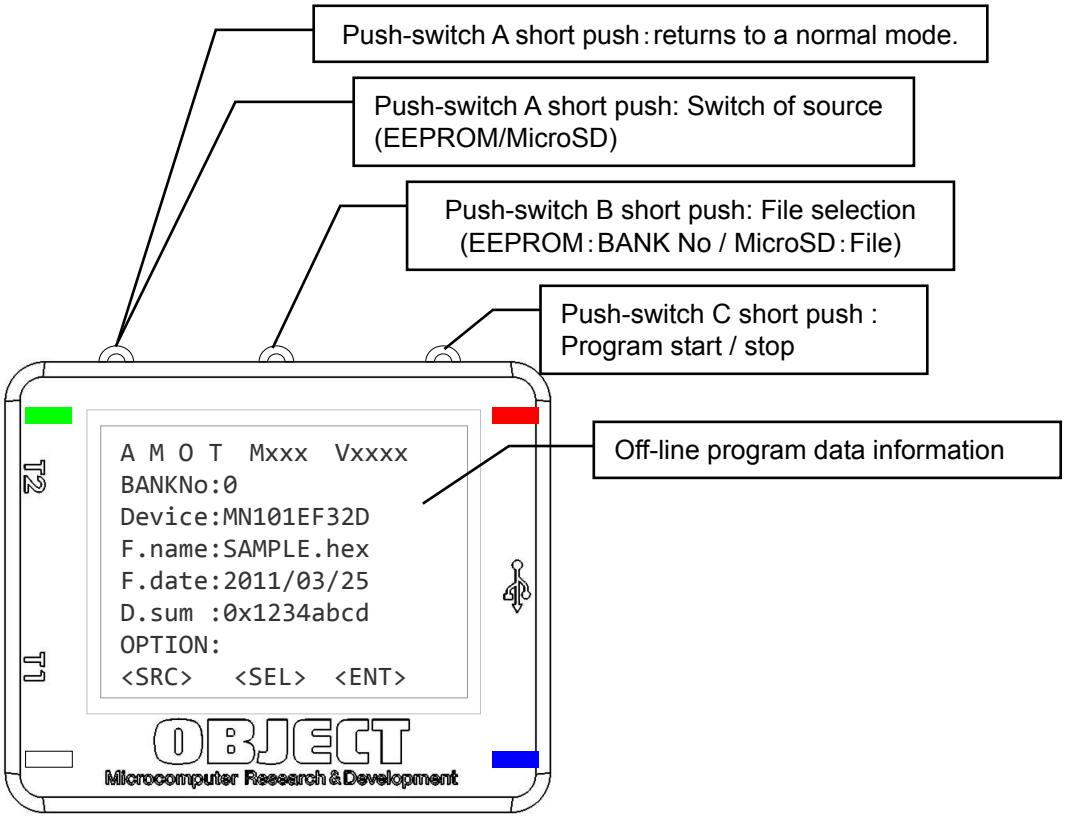
It is the mode which runs a program to a target microcomputer board with an AMOT simple substance.

8.6.1 Off-line one-touch program Off-line mode main menu screen



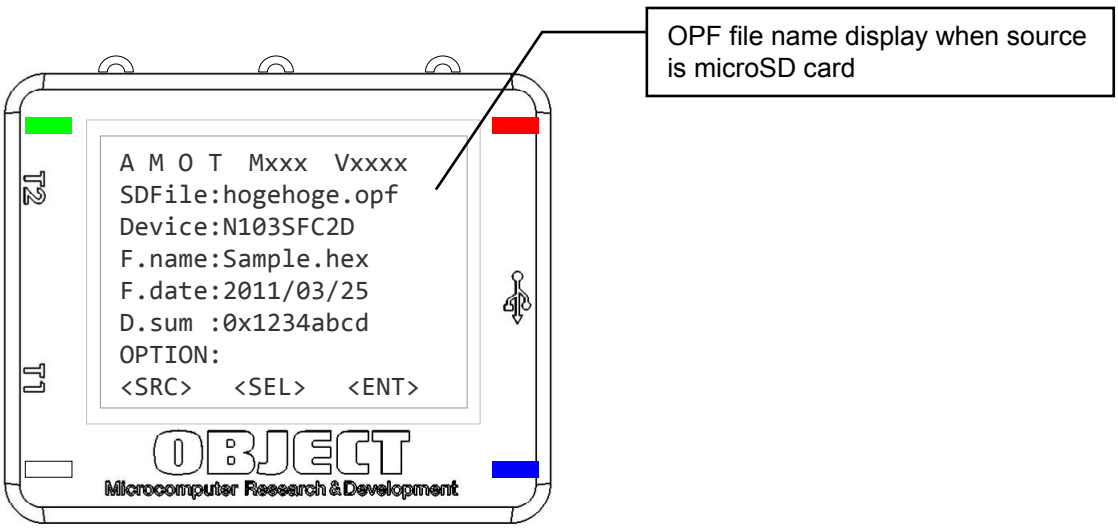
・E.P.V is performed by Push-Switch C short push. Again, operation will be stopped if it pushes.
・Program sauce is built-in EEPROM of the 1-4 bank selected with the DIP switch.
・Off-line program execution result display Return to sub menu after about 1.5 sec.

8.6.2 Off-line mode

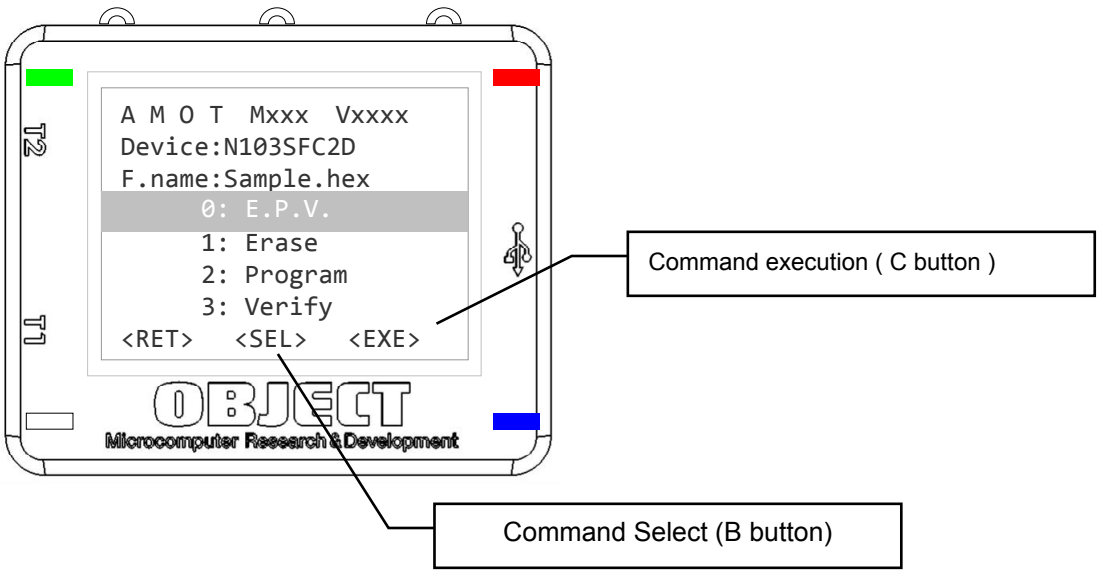

Push-switch A short push : returns to a normal mode.
Push-switch A short push: Switch of source (EEPROM/MicroSD)
Push-switch B short push: File selection (EEPROM : BANK No / MicroSD : File)
Push-switch C short push : Program start / stop
Off-line program data information
A M O T Mxxx Vxxxx
BANKNo:0
Device:MN101EF32D
F.name:SAMPLE.hex
F.date:2011/03/25
D.sum :0x1234abcd
OPTION:
<SRC> <SEL> <ENT>
OBJECT
Microcomputer Research & Development

・Program sauce serves as EEPROM (1-4 bank) with built-in AMOT, or a microSD card. The change of sauce changes by the short push of manual operation button A.
・The bank (EEPROM) in sauce or selection of a file (microSD card) is the short push of manual operation button C.
・Execution of a program goes into a sub menu by the short push of manual operation button C, and chooses four kinds of commands, EPV (Erase/Program/Verify), Erase, Program, and Verify, by the short push of manual operation button B, and it performs it by the short push of manual operation button C.
・The cancellation under program execution is also possible at the short push of manual operation button C. Moreover, progress information is displayed on LCD during off-line program execution, and it also displays a result at the time of the end of execution.
・When a program is interrupted for manual operation button C, it is displayed on Result as "KEY BREAK".
・A result is displayed at the time of the end of an off-line program. It returns to a sub menu by the short push of the manual operation button B or C.
・If the short push of manual operation button C is carried out with a sub menu, it will return to an off-line mode main menu.

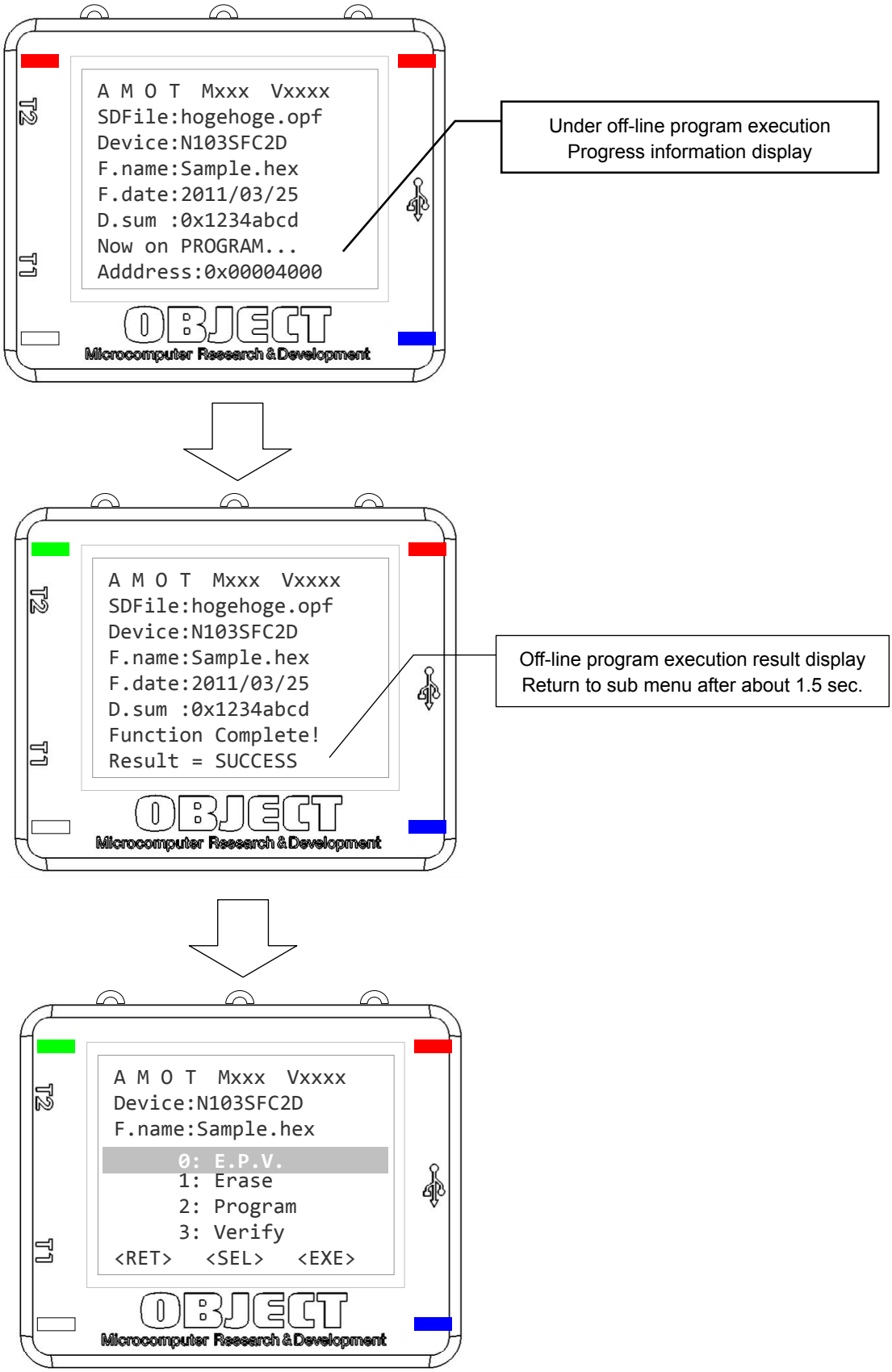
8.6.3 SD card sauce



8.6.4 Off-line mode sub menu screen



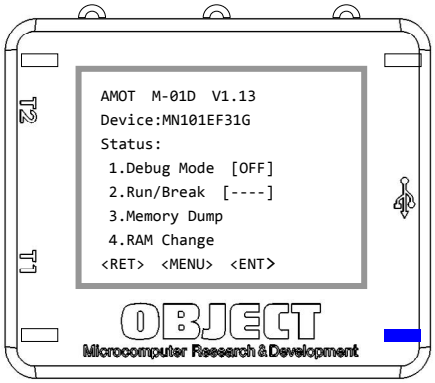
8.6.5 Off-line mode command execution screen



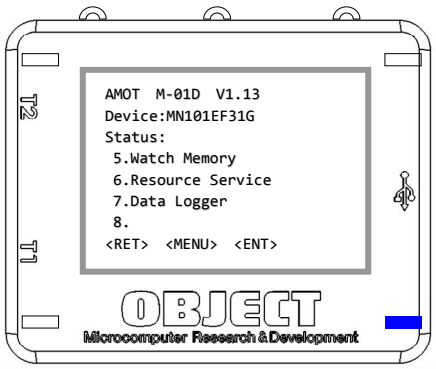
8.7 Hand-held monitor mode

・This function is an off-line, simple monitor mode. The installing function is as shown in the table below.
・As for each function, an individually effective/invalid setting is possible.
・Firmware V1.10 or more and utility software (AMOT_HHM.exe) of AMOT are necessary to use this hand-held monitor (As follows: HHM).
・Update firmware and special utility (AMOT_HHM.exe) can load Dan from our company WEB site.
・Devices supported as of 2011/08 are only MN101 series except 2-wire system DWire microcomputer. The release time is undecided though MN103S and the MN103L series are the support schedules when the future.

Hand-held monitor mode menu 1



Hand-held monitor mode menu 2



No	Function	Explanation
1	Debug Mode	The target microcomputer is started by debug mode.
2	Run/Break	Execution and stop of user program
3	Memory Dump	Dump display of user memory (ROM/RAM)
4	RAM Change	User RAM change
5	Watch Memory	Specified watch display of user memory (ROM/RAM)
6	Resource Service	LCD, LED, and the switch of AMOT are used as a user program resource.
7	Data Logger	Logging in the microSD card as for specified data.
8	Reserve	

Please refer to the AMOT hand-held monitor user's manual for details.

[9] microSD card usage

This is possible to program it to the target microcomputer board by reading the OPF format file preserved on the microSD card in the off-line program mode of AMOT. The format of the microSD card supports FAT/FAT32 of the Windows standard.

Attention! The microSD card is not attached to the product.

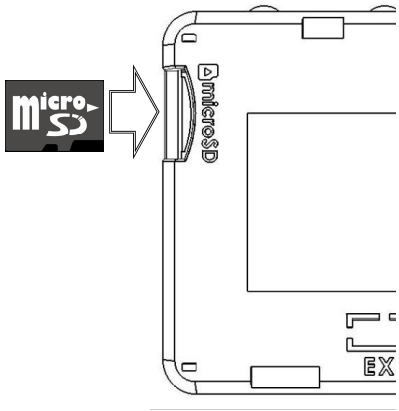
9.1 microSD support information

microSD support information	
Capacity	256 to 512MByte or 1/2/4/8/16GByte
Speed class	Over Class2
Format	FAT/FAT32（Windows LFN*1）

*1 not correctly displayed in LCD of AMOT for the file names other than the alphanumeric character eight characters and four characters (extension ".OPF").

9.2 microSD Direction of card insertion

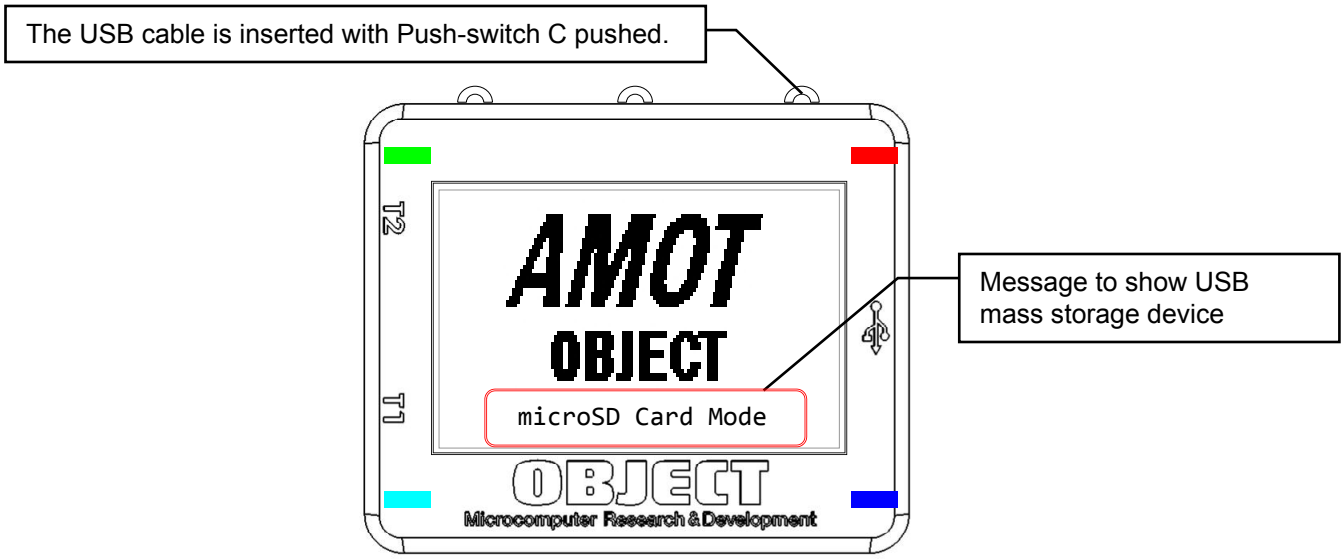
The microSD card slot of AMOT is a push in, and a push out. Please do not take out the installed microSD card forcibly pulling it.



9.3 USB mass storage device

AMOT starts as USB mass storage device (general card reader mode) that the power supply turning on (USB cable insertion) and is supported by the standard then by Windows with Push-switch C pushed. When the OPF file made with AMOBP Commander is forwarded to the microSD card, this mode is used. When AMOT starts in this mode, the off-line mode operation can be used.

Attention! Please note that the microSD card might not be recognized from the operation of an off-line mode of AMOT when the mount of the USB mass storage device is released from Windows.

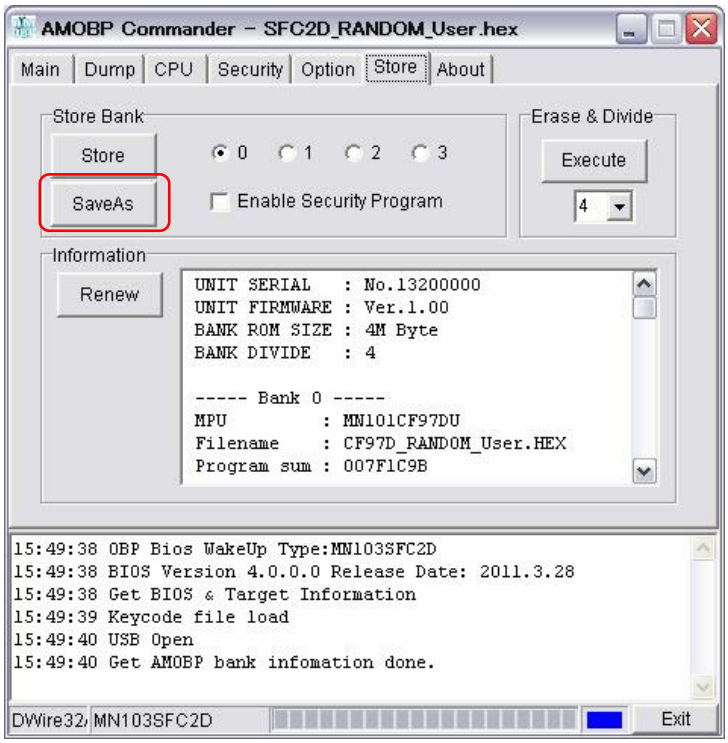


9.4 OPF Format file

This is a target microcomputer program data file that AMOT uses in the off-line program mode (microSD card source). As for the OPF format, program data and detailed information on the target microcomputer are stored. The OPF format file is made by "Save as" command in the Store tab of AMOBP Commander. There is no limitation in the number of OPF files as long as the capacity of the microSD card permits.

Attention! Please preserve the OPF file in the root directory of the microSD card.

OPF format storage information	
Program data	Data programmed to microcomputer
Program data file name	Program data file name (not OPF file name).
Program data preservation date	Program data preservation date
Program data Sam	Checksum of program data (32bit length)
Microcomputer name	Microcomputer name and microcomputer ID, etc.
Microcomputer interface information	DWire8 (2-wire system/three line type)/32A/32L/JTAG and communication clock information, etc.
Microcomputer security key information	Security key data and security key program existence, etc.
Microcomputer sector information	Programmed sector and protecting program existence, etc.



[10] Firmware Update

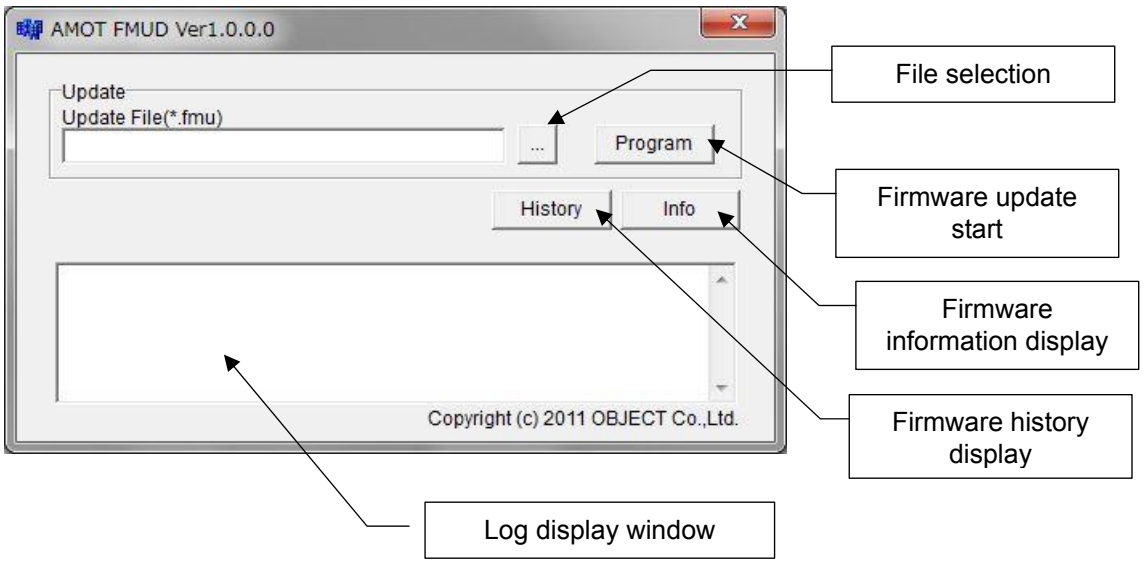
10.1 Firmware Update Sequence

1. AMOT is connected with PC with the USB cable of the product attachment (AMOT should operate correctly as USB device)
2. AMOT_FMUD.exe is started.
3. Update file (.fmu) is specified clicking "…" button in the right of Update File (*.fmu).
4. "Program" button is clicked, and "It is (Y)" is clicked by the confirmation dialog.
5. The update completion is confirmed.

Attention! The updates time is about 30-60 second.
Attention! Please do not detach power supply (USB) of AMOT, and do not operate the button of AMOT while updating it.

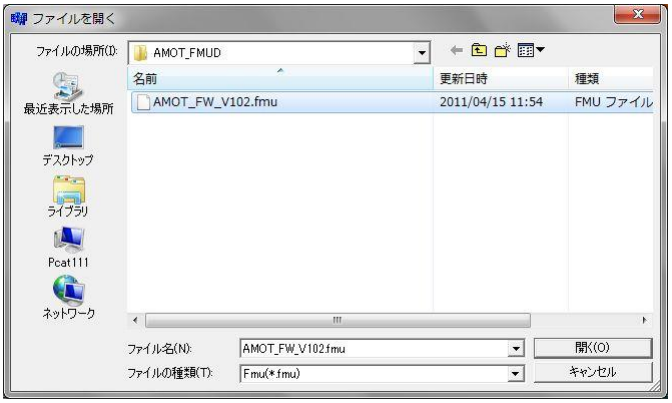
10.2 Firmware update software (AMOT_FMUD.exe)

This is firmware update software that execute on Windows. The update firmware is binary of the original format offered by our company file (xxxx.fmu). Please do not connect anything with the target connector of AMOT when you use this software. Moreover, the installer is not attached, and starts AMOT_FMUD.exe with the directory that unachieved downloaded AMOT_FMUD_Vxxx.zip, please. The above-mentioned USB driver is installed to use AMOT_FMUD.exe and it is necessary to recognize AMOT to Windows correctly. Please note that AMOT_FMUD.exe cannot be used in the USB mass storage device mode.



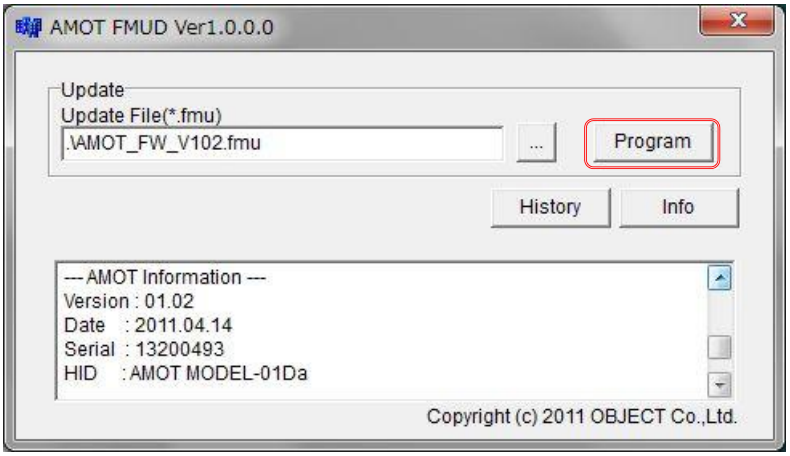
10.2.1 File selection

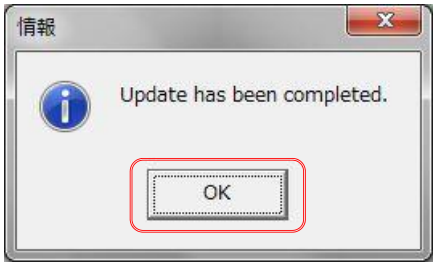
The file selection dialog window is displayed, and select pertinent update file (xxxx.fmu), please.



10.2.2 Program (firmware program)

The content of the firmware update file specified that the Program button is clicked is programmed to AMOT. The confirmation dialog is displayed, and clicks "Yes"(Y), please. Please do not pull out the USB cable from AMOT, and touch the operation button of AMOT while programming it.

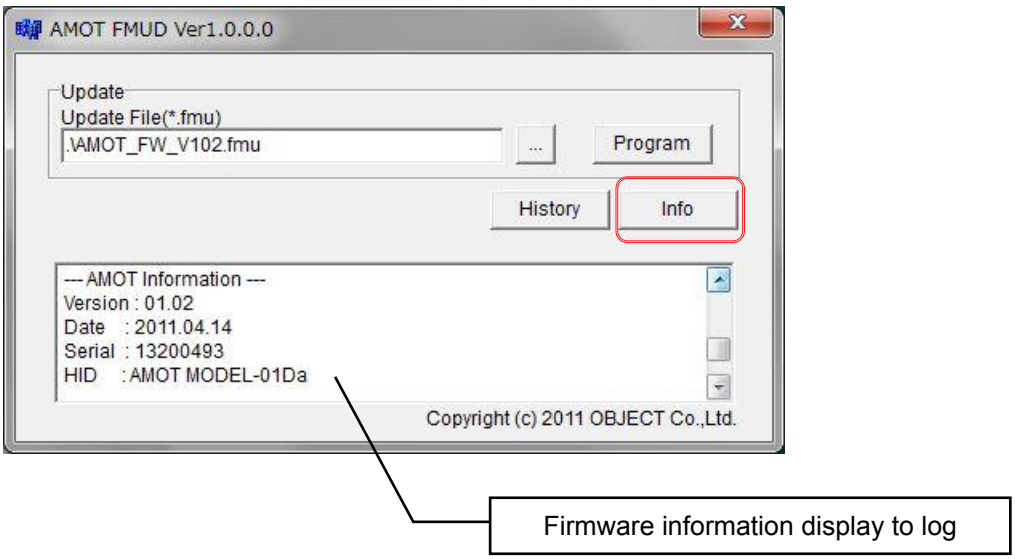




Attention! SYSTEM LED becomes blinking red if failing in the update of the firmware. The repair is needed and, in that case, contacts our company, please.

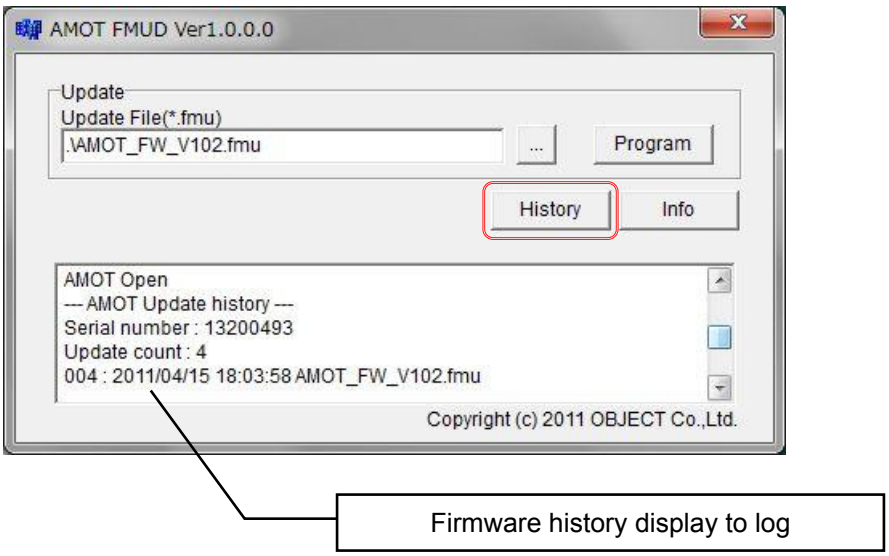
10.2.3 Info (firmware information display)

The firmware inside information is read when the Info button is clicked and it displays it in the log.



10.2.4 History (firmware history display)

The update history etc. preserved in the firmware is read when the History button is clicked and it displays it in the log.



AMOT Users Manual Ver 1.8

July 12, 2012

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